

intends his handbook of pharmacognosy to be a work of different character from any of these, of wider scope and higher aims, extending and deepening the scientific foundations of pharmacognosy, a field upon which Prof. Tschirch, assisted by his numerous pupils, has laboured for many years.

The author divides the subject-matter into general (or scientific) and special (or applied) pharmacognosy, and rightly insists that the former should be studied under a capable teacher at a properly equipped institution. General pharmacognosy is subdivided into two sections, the first of which deals with the problems of pharmacognosy, with the cultivation, commerce, history, and study of drugs, while the second treats of the sciences of botany, chemistry, zoology, physics, geography, history, &c., in so far as they directly relate to pharmacognosy. In the second subdivision of the work, viz. special pharmacognosy, each drug will be described separately, and, judging from the specimen issued with the first part, in the fullest conceivable manner, each account being a complete monograph of the drug. The grouping of these monographs is to be based upon the chemical relationship of the active constituents of the drugs which, it is hoped, will form a natural bridge to their therapeutical uses.

Comparing the scheme of the work with the plan of a classical English work on the same subject, the "Pharmacographia" of Flückiger and Hanbury, it will be seen that the chief differences lie in the separate treatment of general and special pharmacognosy, in the endeavour to base the grouping upon the chemical constituents, in the greater detail and in the extreme richness of illustration.

That the handbook of pharmacognosy will be one of the most voluminous and one of the most important works that has ever been produced on the subject cannot be doubted. The author's profound acquaintance with the anatomy of drugs is a guarantee that each description of the structure of a drug will be a masterpiece. The chemistry of drugs has also received his continuous attention for years; but whether our knowledge of their active constituents is sufficiently extensive to allow of the proposed classification being satisfactorily accomplished remains to be seen. The work contains the promise of rich stores of information, of abundant literary references, and of admirable illustration that will be invaluable to all who are interested directly or indirectly in crude drugs. HENRY G. GREENISH.

Memories of Dr. E. Symes-Thompson, a Follower of St. Luke. By his Wife. Pp. vii+195. (London: Elliot Stock, 1908.) Price 3s. 6d.

THE life of every physician who has attained and held for many years an acknowledged place in his profession necessarily includes in its scope something beyond his daily medical work. Some, like Sir S. Wilks and Gairdner in this country and Trousseau and Charcot in France, have left behind them a large addition to medical science, although now, with increased knowledge and specialisation, the clinician leaves a large part of the scientific field to others. Some, like Sir A. Clark, have been great teachers and public leaders in medicine; and others, again, without much of public recognition, have brought a detached and philosophic mind to bear on the problems of life and disease—and their teachings have exerted profound influence.

Dr. Symes-Thompson belongs to yet another class. A man of great industry, with ready insight and quick sympathy, the *practice* of medicine was his forte. To this it must be added that he was an earnest Churchman and one of the founders and a

Provost of the Guild of St. Luke, and that he was possessed of an energy and rare social gifts which gave him a leading place in every cause that he espoused. He was for many years physician to the Brompton Hospital for Diseases of the Chest, and was one of the first authorities upon the effects of climate in the treatment of consumption, and contributed many valuable observations upon the influence of climates upon chronic disease.

As professor of physic at Gresham College for a long term of years, he assisted in that extension and popularisation of medical knowledge which in this country has accompanied the advance of education. Dr. Symes-Thompson will also be remembered as a leader in life-assurance medicine. He succeeded in gaining the confidence of the lay authorities in life assurance, and did much to advance our knowledge in this branch of medicine.

The present volume of "Memories," recently published by his wife, gives a charming account of Dr. Thompson's personal and family life, in London and at his country house. It includes also many tributes of affection from colleagues and old friends, and cannot fail to be of interest to the large number of persons who were brought into contact with him.

Wax Craft: All about Beeswax. Its History, Production, Adulteration, and Commercial Value. By T. W. Cowan. Pp. 172. (London: Sampson Low, Marston and Co., and British Bee Journal Office, 1908.) Price 2s. net.

BETWEEN theology and bee-keeping there is apparently little connection. Yet whilst Luther and Zwingli were compassing the downfall of a Church, they were also preparing hardship for a rural industry. With the decline of Roman ritual the demand for candles and tapers slackened, and as a consequence the sellers of beeswax, whatever their religious leanings, had at least financial reason to mourn the advent of the Reformation.

Mr. Cowan touches on this and other historical matters in the introduction to his little book, which is devoted to a general description of beeswax. The secretion of the wax and the methods of "rendering" it are fully described, several illustrations of extractors and presses being given, with hints upon the best modes of manipulation. Refining and bleaching processes; the making of comb-foundation; distinctions between commercial varieties of wax; methods of adulteration and analysis, and the applications of beeswax in commerce, are all dealt with in turn; and the book concludes with a collection of technical recipes.

In some of the sections the treatment is too sketchy to be of much value to the technical reader. For instance, the chapters on the adulteration of beeswax and on the manufacture of wax flowers would not greatly assist the analyst or the modeller. Moreover, outside his own immediate province the author is not always a trustworthy guide—as witness the statement (p. 110) that paraffin wax is obtained by the distillation of naphtha. But the book as a whole is a useful one for bee-keepers, and is generally interesting. C. S.

Educational Wood-Working for School and Home. By Joseph C. Park. Pp. xiii+310. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd., 1908.) Price 4s. 6d. net.

THIS book is intended primarily for use in the public schools of America, and it indicates for English readers to what extent manual training enters into the curriculum of such schools, and how the training in this branch of work is carried out. The book is

divided into seven parts or chapters, which deal respectively with the following subjects:—(1) The enumeration, description, and illustration of wood-working tools, such as benches, squares, chisels, saws, planes, brace and bits, &c.; (2) woodworking machinery, including band and circular saws, wood-planers, and wood-working lathes; (3) the classification, description, and properties of various woods; (4) fastenings, such as nails, screws, glue, dowels, cleats, &c.; (5) the finishing of wood surfaces by paints, stains, polishes, and varnishes; (6) in this part we have a graduated set of examples, with dimensioned drawings, of suitable objects to be made at the bench, beginning with simple knife-work and ending with a combination desk and bookcase; and in (7) instruction is given in wood turning, with examples for practice. There are three appendices giving some problems in practical geometry, some useful tables and instructions, and a key for the identification of all the principal woods of North America.

As will be seen from the foregoing, the book is intended to be used under the direction of a skilled workman, who is responsible for giving instruction in the proper handling and manipulation of the tools. Teachers in this country will be well advised in consulting this excellent text-book.

LETTERS TO THE EDITOR.

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On the Change of Colour in the Eyes of an Attis Spider.

ON Saturday, September 5, I found a small spider with light green, transparent legs and brown body with silver flutings. I bottled it quickly, and hurried up to my friend Mr. Strickland, and on examining it there under a magnifying glass observed a frequent change of colour in its eyes. I took it home, and on examining it for about six hours consecutively found it to have the faculty of changing the colour of its eyes at its own free will. In an instant it changed the honey-coloured eyes into shining black. While it changes the eyes, a bright dot or streak appears and vanishes all at once.

I am quite sure that the animal actually changed something inside the eyes. The cornea—as one may call it—is circular. The two corneas stand in a vertical plane so that they face the observer like a pair of gig-lamps, or, still better, as those in front of a railway locomotive. Behind each cornea is a conical sack, in shape much like an ordinary butterfly-net or a jelly bag. Taken together with the cones, the pair of eyes look like a pair of field glasses. The spider was found to wag the conical portion of the eyes every now and then. Fortunately, the head in this species being translucent, the mechanism by which the colour-change is effected can be easily seen by means of a good pocket lens. The spider itself was 6 mm. in length, and its conical eye one millimetre.

I put the spider in a small, thin, clean test-tube, and stopped the mouth of the tube with a little bit of cotton-wool. Having done this, I took the tube to a powerful table lamp and examined it with a pocket lens in that light against a white background. A thin strip of white paper serves very well as a background. When I first took it near the light the spider seemed to be startled and ran about. It was at this moment that I saw it wagging the conical part of the eye all the more. The spider ran a few paces, then stopped, and began moving the eyes very vigorously. On closer examination I found that the outer and larger end of the cone was a transparent honey colour. The inner tapering portion of the cone was jet black. The light and black halves were divided by a well-

marked ring. The change in the colour of the eye is caused—as will be explained immediately—by the wagging to and fro of the two posterior cones. Reference to the diagram will show that the cones can be in such a position (A, A) that their axes are parallel to one another and in the line of sight of the spectator facing the cornea, or they can converge to a point just halfway between the two eyes in question (B, B), or the axis of one eye may converge while that of the other will remain unchanged. It is to be observed that the apices of the cones never diverge.

Roughly speaking, the black extends only one-third of the whole length of the cone from their tips. Consequently,

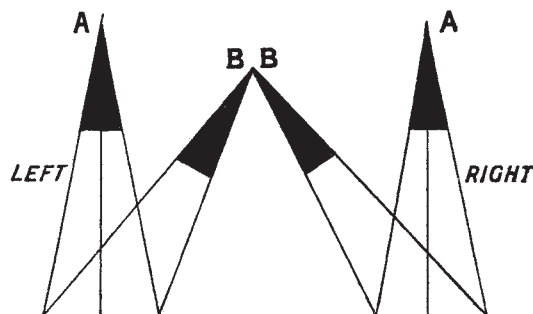


FIG. 1.—(1) Position A, A. Both the eyes of the spider now appear black, because the line of sight plunges into the black portion of the cone. (2) Position B, B. Both the eyes now appear honey-coloured, because both lines of sight cut the honey-coloured parts of the cones. (3) Position A (right), B (left). The right eye will appear black, the left honey-coloured.

when the spectator faces the eyes, and the axes of the cones are parallel, he sees into the depths of the two cones, and the eyes necessarily appear jet black. When the two tips of the cones converge the line of sight strikes the honey-coloured outer portion of the cones, and then the eyes in consequence appear honey-coloured. Lastly, the spider has the power to cause the tip of only one cone to converge inward, and then only that eye appears honey-coloured, while the other one remains black. It has been stated above that when the spider changes the colour of the eye a bright line or dot traverses the cornea. This is due to the ring formed where the black and honey-coloured portions of the cones unite traversing the cornea as the colour of the eye changes from light to dark, and *vice*

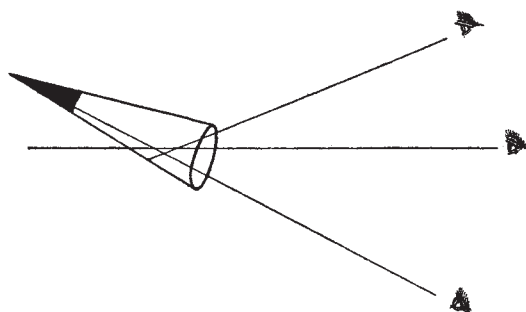


FIG. 2.

versâ. It must be well borne in mind that in all these cases the cornea of the eye remains perfectly unchanged and immobile, the change of colour being wholly and entirely due to the movement of the cones behind it.

When the line of sight from the observer's eye to the cornea is at right angles to the latter the eyes invariably appear honey-coloured. The reason is obvious, namely, that the line of sight strikes only the honey-coloured portion of the conical sack behind the eyes. Hence it follows that the axis of the cones must be either above or below the line of sight. But as a matter of fact it is above it. The proof of this is that if you look at the eyes a little